

PATENT APPLN. NO. 10/544,210
RESPONSE UNDER 37 C.F.R. § 1.116

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REMARKS

Claim 19 has been amended to include the limitations of claim 22. Claim 22 has been canceled.

Referring to the Action, claim 22 is rejected only under 35 U.S.C. § 103(a) as being unpatentable over Biensan et al., US 6,071,645 ("Biensan"), in view of Miyasaka, US 5,478,674 A. Since claim 19, an independent claim, includes the limitations of claim 22 and claims 20, 21 and 23-25 depend on claim 19 and, therefore, also include this limitation, all of the examined claims will be patentable, if the rejection of claim 22 is overcome.

The position of the Office in the rejection of claim 22 is that Biensan does not disclose the specific surface area of the positive active material. Miyasaka is cited as teaching a nonaqueous electrolyte secondary battery in which the specific surface area of the positive active material is 0.1 m²/g and not more than 3 m²/g, which overlaps the claimed range.

The rejection of claim 22 is improper. First, the Office provides no reasons why it would have been obvious for a person of ordinary skill in the art to combine Miyasaka with Biensan as proposed in the Action. As stated in MPEP § 2141(III): "The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have

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been obvious" (emphasis applicants'). The Office has not supported the 35 U.S.C. § 103(a) rejection and it should be removed for this reason alone.

Second, Miyasaka is not properly combinable with Biensan. Miyasaka discloses that "[t]he specific surface area of the active material in the positive electrode is ... most preferably greater than 0.1 m²/g and not more than 3 m²/g" (Col. 4, lines 17 to 21), and that the active material is represented by "the chemical formula (I) $Li_xA_yM_2J_nO_p$: wherein A represents at least one alkali element selected from the group consisting of Na and K; M represents at least one transition element selected from the group consisting of Co, Mn and Ni; J represents an element having a glass-forming ability selected from the group consisting of B, Si, Ge, P, V, Zr, Sb and Ti; ..." (Col. 1, line 57 to Col. 2, line 5).

Therefore, the active material disclosed in Miyasaka does not include the element corresponding to element A of the chemically active material of Biensan, which is selected from magnesium and calcium, and which must necessarily be included in order to obtain the active material of the present invention. Accordingly, the teachings of Miyasaka relating to the specific surface area of the compound oxide disclosed therein cannot be logically combined with the different chemically active material of Biensan.

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In the Action the Office cites *In re Wertheim*, 191 USPQ 90 (CCPA 1976), for the general proposition that a *prima facie* case of obviousness exists where the claimed ranges "overlap or lie inside ranges disclosed by the prior art". The "rule" relied on by the Office, however, is inapplicable to the facts of the rejection in the present application where the reference cited as disclosing the overlapping ranges discloses a different positive active material.

Moreover, notwithstanding the failure of the Office to properly support its case of obviousness, the data of the examples of the present specification demonstrate unexpected results over the closest prior art, i.e., Biensan, sufficient to rebut any *prima facie* obviousness considered by the Office to be supported by the references.

As explained in the response filed October 20, 2009, to the Office Action dated July 20, 2009, in the examples of Biensan, only lithium nickel oxides are disclosed and lithium cobalt oxide is not disclosed. Biensan discloses lithium nickel oxide containing Mg and Ti (Battery IV) shown in Tables I and II. As shown in Table 2 of the present application, lithium cobalt oxide containing Mg and Ti (Battery A5) and lithium cobalt oxide containing Mg and Zr (Battery A1) (according to the present invention) are used as positive electrode active materials. As understood from the

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results for capacity retention after 250 cycles shown in Table 2, the combination of Mg and Zr in lithium cobalt oxide (capacity retention 94.0%) provides unexpectedly improved charge-discharge cycle characteristics compared with the combination of Mg and Ti in lithium cobalt oxide (81.7%), which is the closest comparison to the examples of Biensan.

It is noted that in the Final Office Action the Office takes the position that a capacity retention of 94% after 250 cycles as compared to a capacity retention of 81.4% after 250 cycles is not significant. The Office is not making the proper comparison since battery A5 - not battery A9 - corresponds to the closest prior art cited by the Office. Moreover, the position of the Office is not proper because the Office has failed to provide any reasons why an increase in capacity retention of 15%, i.e., $(94.0-81.7)/81.7$, is not significant. Nothing in the prior art suggests that any increase in capacity retention would be expected with the use of a lithium transition metal oxide containing Mg and Zr as compared with the use of a lithium transition metal oxide containing Mg and Ti as a positive active material in a nonaqueous electrolyte secondary battery.

The data of the application rebut the Office's case of obviousness under 35 U.S.C. § 103(a) and demonstrate the

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patentability of the nonaqueous electrolyte secondary battery of the present invention.

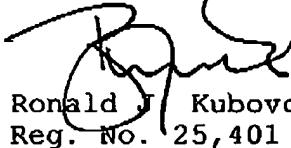
For the above reasons, removal of the 35 U.S.C. § 103(a) rejections in the Final Action is in order.

The foregoing is believed to be a complete and proper response to the Office Action dated February 25, 2010.

In the event that this paper is not considered to be timely filed, applicants hereby petition for an appropriate extension of time. The fee for any such extension may be charged to our Deposit Account No. 111833.

In the event any additional fees are required, please also charge our Deposit Account No. 111833.

Respectfully submitted,
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